

2007 RESEARCH PROBLEM STATEMENT

Problem Title: Crashes in the Vicinity of Major Crossroads

No.: 07.06-01

Submitted By: Tim Boschert (UDOT) and Grant Schultz (BYU)

Email: tboschert@utah.gov, gschultz@byu.edu

Project Champion: Larry Montoya (UDOT Traffic & Safety) and Tim Boshert (UDOT Planning)

(UDOT or FHWA employee who needs this research done, will help the Research Division lead this project, and will spearhead the implementation of the results. If the project gets prioritized at the UTRAC conference, a Champion Commitment Form will be required before funding.)

1. Briefly describe the problem to be addressed.

The American Association of State Highway and Transportation Officials (AASHTO) Green Book states that “Driveways should not be situated within the functional boundary of at-grade intersections. This boundary would include the longitudinal limits of auxiliary lanes.” The functional area of an intersection is critical in providing for safety and efficiency at signalized and unsignalized intersections. Past research has explored the effect of crossroads in the vicinity of interchanges and the impact that these crossroads have on capacity and safety. The AASHTO Green Book also states that “Driveway terminals are, in effect, low-volume intersections...” There is a need to explore the relationships that exist between access and conflicts points in the vicinity of major crossroads to be utilized in developing guidelines for intersection setback from these major crossroads. The purpose of this research is to answer the questions associated with the impact of accesses in the vicinity of major crossroads by examining midblock crashes and their proximity to major crossroads. Some of the questions to answer include: What percent of the crashes occur within the functional area? What is the severity of crashes as a function of their proximity to major crossroads? What are the advantages of designing intersections with access points well beyond the functional area and the major crossroad? These and other questions would be answered as a function of driveway density and conflict points.

2. Strategic Goal: ☒ Preservation ☒ Operation ☒ Capacity ☒ Safety (check all that apply)

3A. List the research objective(s) to be accomplished:

1. Estimate impacts on safety of locating driveways in the vicinity of major crossroads.
2. Utilization of the GIS enabled web delivered data almanac and the C.A.R.S. data system to collect data on crash locations throughout the state within the vicinity of major crossroads.
3. Develop relationships between access design and location as a function of safety.
4. Provide guidance for planning section on design guidelines for access location in the vicinity of major crossroads.

3B. List the major tasks to accomplish the research objective(s):

Estimated person-hours:

1. Develop a project scope of work and detailed estimate.
2. Perform literature review on safety within the vicinity of major crossroads.
3. Evaluate and summarize crash data from the C.A.R.S. data system and the GIS crash data almanac from a representative sample of corridors throughout the state to provide background data necessary for analysis. Data to include would not only be crashes in general, but crash type, cross access, median type, lane configuration, speed limit, land use, etc.
4. Develop relationships between access design and location as a function of safety for a representative sample of corridors throughout the state.
5. Make recommendations on the impact of access location in the vicinity of major crossroads as a function of access density and conflict point density.
6. Report results to UDOT in the form of a written report.

4. Estimate the cost of this research study including implementation effort (use person-hours from No. 3B): \$40,000

5. Indicate type of research and/or development project this is

Large: ☒ Research Project ☒ Development Project
Small: ☐ Research Evaluation ☐ Experimental Feature ☐ New Product Evaluation ☐ Tech Transfer Initiative
☐ Other: _____

(A small project is usually less than \$20,000 and shorter than 6 months)

6. Outline the proposed schedule (when do you need this done, and how will we get there):

It is recommended that this project begin in late summer or Fall 2007 with the initial tasks of the project scope of work and detailed estimate, followed with the literature review. The work will continue concurrently with an evaluation and summary of crash data and other data collection efforts. This will then be followed with the recommendations, and a written report. It is anticipated that the project would take 12-16 months.

7. What type of entity is best suited to perform this project (University, Consultant, UDOT Staff, Other Agency, Other)?

University and UDOT Staff joint participation.

8A. What deliverables would you like to receive at the end of this project? (e.g. useable technical product, design method, technique, training, workshops, report, manual of practice, policy, procedure, specification, standard, software, hardware, equipment, training tool, etc.)

The deliverable expected from this project would include an engineering report documenting the literature review and research results. The document would outline the relationships between crashes and access density/conflict points in the vicinity of major crossroads.

8B. Describe how this project will be implemented at UDOT.

This project would be implemented at UDOT through the Planning Division. The result of this research will be helpful for both planning and design to provide guidance on access location and design, particularly with respect to the proximity of major crossroads. This project will be used as a tool to use as a tie with access management and to use to enforce access management to present relationships between safety and access spacing.

8C. Describe how UDOT will benefit from the implementation of this project, and who the beneficiaries will be.

UDOT will benefit from this project through a better understanding of the safety effects of access design and placement. This information can then be passed on from the Planning Division through Traffic & Safety, Design, and Permitting.

9. Describe the expected risks and obstacles as well as the strategies to overcome them.

No known risks.

10A. List other people (UDOT and non-UDOT) who are willing to participate in the Technical Advisory Committee (TAC) for this study:

| <u>Name</u> | <u>Organization / Division / Region</u> | <u>Phone</u> | <u>Email</u> |
|------------------|---|----------------|--|
| Grant Schultz | Brigham Young University | (801) 422-6332 | gschultz@byu.edu |
| Tim Boschert | UDOT Planning | (801) 965-4175 | tboschert@utah.gov |
| Larry J. Montoya | UDOT Traffic & Safety | (801) 965-4924 | lmontoya@utah.gov |
| Doug Anderson | UDOT Research | (801) 965-4377 | dianderson@utah.gov |
| Darin Deursch | UDOT Region 1 Traffic | (801) 620-1607 | ddeursch@utah.gov |
| Troy Torgersen | UDOT Region 4 Traffic | (435) 893-4707 | ttorgersen@utah.gov |
| Doug Bassett | UDOT Region 3 Traffic | (801) 227-8019 | dbassett@utah.gov |
| Troy Peterson | UDOT Region 2 Traffic | | |
| Justin Sceli | UDOT Statewide Permits Officer | | |

10B. Identify other Utah, regional, or national agencies and other groups that may have an interest in supporting this study:
NCHRP, TRB